

UNDEREMPLOYMENT IN THE UK REVISITED

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This paper addresses the issue of underemployment in the UK labour market – the demand for hours of work is less than workers' willingness to supply extra hours. Workers would like to work more hours, but there is insufficient product demand to justify additional hours. This phenomenon has been evident in the UK labour market for some time, but has grown significantly during the Great Recession. In this paper, we develop a new index of underemployment which is intended to combine indicators of excess capacity on the extensive (jobs) and intensive (hours) margins of the labour market. This index continued to increase during 2012, though unemployment was stable. The paper also investigates the microeconomic determinants of underemployment, finding that it is particularly prevalent among the young and unqualified.

Keywords: Unemployment; underemployment; under-utilisation

JEL Classifications: J01; J11; J21; J23; J38; J64

The unemployment rate is the most common measure of labour market slack. It shows how many people are actively seeking work and are without a job, expressed as a proportion of the labour force, which is the employed plus the unemployed. The unemployment rate in the UK rose from a low of 5.2 per cent at the end of 2007 to a high of 8.4 per cent at the end of 2011 before falling back to 7.8 per cent at the start of 2013. But during the Great Recession we have also seen a steady increase in the UK in the number of the employed who want more work than is currently available to them – they are *underemployed*. This may partly be explained by falling real wages, which has also been a feature of the recession. For some people, principally home-owners with a variable rate or tracker mortgage, low interest rates have partly compensated for declining real wages. Nevertheless, it is now our view that there has been such a dramatic increase in underemployment that the unemployment rate is now a poorer indicator of the degree of slack in the labour market than it has been in the recent past. Further, estimates of the 'output gap' that rely on the unemployment rate may be giving a seriously misleading estimate of the degree of excess capacity in the UK labour market.

The underemployed are defined as those currently in work who would prefer to work longer hours. Their ability to supply hours at the current wage is constrained by the level of demand in the economy, because there simply isn't enough work around. Some of these people

are classified in the official statistics as part-timers who would prefer to be full-time, but the phenomenon also applies to full-timers, which is not reported in the published Office for National Statistics (ONS) statistics. We have addressed this issue in an earlier article in this journal (Bell and Blanchflower, 2010). There, we suggested that underemployment might be associated with labour hoarding, the use of part-time and temporary contracts. It was facilitated by the flexibility of the UK labour market and was a particular problem amongst the young. A recession might also increase the number of discouraged workers who choose to leave the labour market. We showed that the underemployed are more likely to be depressed, suggesting that hours constraints have a negative effect on their well-being.

In this paper, we extend and update our analysis of underemployment. Firstly, we examine the evolution of underemployment since 2010, noting that it has risen over this period, at the same time as real wages have been falling sharply.¹ Secondly, we define a new measure – the underemployment index. Unlike the unemployment rate, which measures the excess supply of people in the labour market, the underemployment index measures the excess supply of *hours* in the economy. It combines the hours that the unemployed would work if they could find a job with the change in hours that those already in work would prefer. Thus it captures both the intensive and extensive margins of the labour market. We show that the gap between the unemployment rate and our

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underemployment index has widened over time and at the beginning of 2013 is at a historically high level.

I. The evolution of underemployment

Table 1 provides some background data on the labour market. These include employment, unemployment and the residual category of out-of-the-labour force (OLF), which consists of students, home workers, the disabled and the retired. The total population aged 16+ is also reported. The table also provides estimates of aggregate underemployment for 2008, when the recession began;

for 2010 when we wrote our previous article; and for 2012, which uses the most recent data point available for November 2012 to January 2013. Table 1 Part A shows that since the recession began unemployment rose from 1,620,000 (5.2 per cent of the labour force) in December–February 2008 to 2.5 million (7.9 per cent) in December–February 2008 to 2.5 million (7.9 per cent) when the coalition government took office (April–June 2010) to 2,516,000 (7.8 per cent) in the latest data (November–January 2013) at the time of writing.

Claims that employment is at the highest level ever are

Table 1. Employment, unemployment, temporary workers and part-time workers and OLF wants a job (ages 16+)

A. Basic Labour Market data ('000s)

	OLF	Unemployed	Employed	Population	Employees		Self-employed	
					FT	PT	FT	PT
2008 (Dec–Feb)	9062	1620	29499	48909	18971	6431	2937	933
2010 (Apr–June)	9358	2471	28975	49771	18178	6653	2908	1015
2012 (Nov–Jan '13)	8954	2516	29732	50717	18585	6704	2993	1186

B. Underemployment ('000s)

	Temporary	Temporary couldn't find permanent	Part-time	PT Would like full-time	OLF (16-64)	OLF (16-64) wants a job
2008 (Dec–Feb)	1443	362	7365	724	9062	2190
2010 (Apr–June)	1559	565	7667	1072	9358	2342
2012 (Nov–Jan '13)	1638	657	7890	1398	8954	2318

Source: ONS Labour Force Statistics, March 2013, <http://www.ons.gov.uk/ons/rel/lms/labour-market-statistics/march-2013/statistical-bulletin.html>.

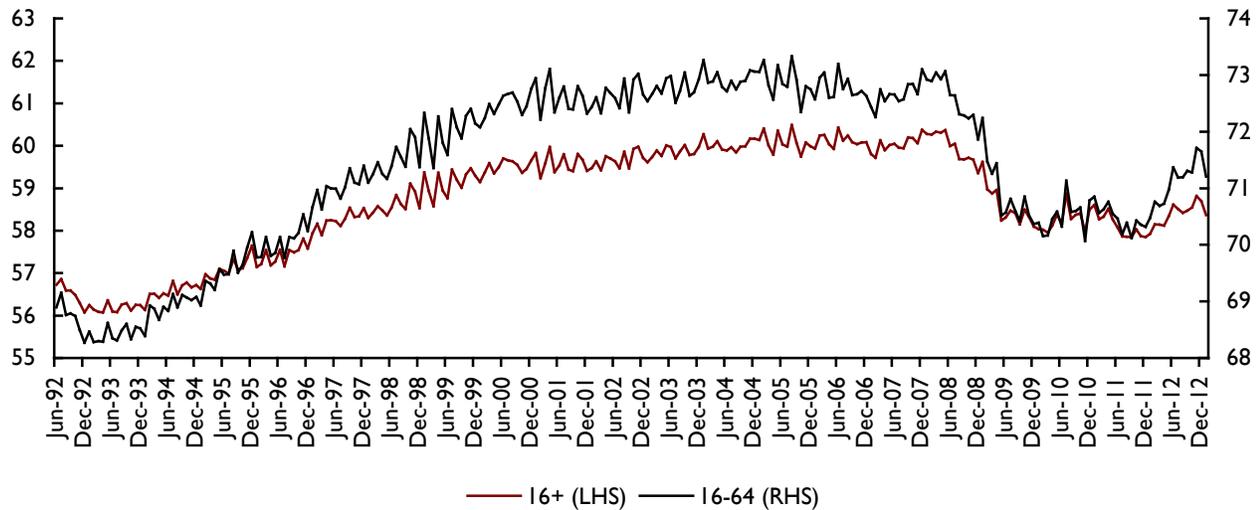
C. Underemployed workers in the UK Labour Market, April–June 2000–12

	Underemployed workers ^(a) ('000s)	Non-underemployed workers ('000s)	Unknown ('000s)	Total ^(b) ('000s)	Underemployment rate ^(c) (%)
2000	2,084	25,033	282	27,117	7.7
2001	1,826	25,532	285	27,358	6.7
2002	1,870	25,686	294	27,556	6.8
2003	1,837	26,004	285	27,842	6.6
2004	1,783	26,274	304	28,057	6.4
2005	1,840	26,489	329	28,329	6.5
2006	1,867	26,754	302	28,621	6.5
2007	1,963	26,794	339	28,757	6.8
2008	2,069	26,990	389	29,059	7.1
2009	2,697	25,708	404	28,405	9.5
2010	2,740	25,751	410	28,490	9.6
2011	2,826	25,939	392	28,765	9.8
2012	3,049	25,870	496	28,918	10.5

Source: ONS, Labour Force Survey datasets.

Notes: (a) Underemployed workers are those who are employed but who either wish to work more hours in their current role or who are looking for an additional job or for a replacement job which offers more hours. They must also be over 16 and be currently working under 40 hours per week if they are between 16 and 18 and under 48 hours if they are over 18. Finally, they must be able to start working extra hours within the next two weeks. (b) This total excludes those workers who have unknown underemployment status. (c) This is calculated by dividing the total number of underemployed workers by the total number of people in employment that have known underemployment status.

Figure 1. UK employment rates, 1992–2013



correct but this rise is coincident with the population aged 16+ being at an all-time high. The 16+ population has risen by 1.8 million since the start of the recession and by 950,000 since the coalition took office. As can be seen from figure 1, which plots the employment rate – defined as 16+ employment divided by the 16+ population – it is markedly lower in 2012 than it was for almost the entire ten-year period under Labour from 1997–2007. Employment in December 2012 was 233,000 higher than it was in January 2008, although the proportion of the 16+ population that are employed was much lower in 2012 (60.3 per cent and 58.6 per cent respectively), driven by the sharp rise in the working-age population over that time period. Since 2008, the number of full-time employees has fallen by 386,000, while the number of part-time employees has increased by almost 300,000. The number of self-employed has increased by almost 60,000 full timers and, notably, by 253,000 part-timers. The shift to part-time working is likely the most robust of our previous explanations of underemployment. In its usual interpretation, labour hoarding is unlikely to have persisted. There is no evidence that businesses, unlike the OBR, have consistently erred on the side of optimism.

Part B of table 1 shows that there has been a substantial increase in indicators of underemployment. Between 2008 and 2012 the number of part-time workers who want full-time jobs increased by 674,000, while those out of the labour force (OLF) wishing to find a job increased by 130,000. Between 2008 and 2012, there has been an increase in the demand for work, both

on the extensive and intensive margins of the labour market.

The ONS has also noted that underemployment has risen sharply indeed they calculate that the number of people in work wanting more hours stood at 3.05 million in April to June 2012.² Part C of table 1 presents the most recent data showing the level and rate of underemployment from 2000–12. The ONS defines underemployment levels and rates based on the number of workers who express a desire to work more hours at their current wage rate. These statistics are based on the Labour Force Survey (LFS), which asks all those who are not looking for a different or additional job whether they would like to work longer hours at current basic rate of pay if given the opportunity. Thus it asks (1) those answering ‘yes’ to this question; (2) those who are seeking an additional job; and (3) those who are looking for a different job because they want to work longer hours, how many additional hours they would like to work.

Table 2 presents some statistics on those who are seeking longer working hours at their present rates of pay. We use the weighted micro data from the LFS for each calendar year from 2008–12. Among all workers, the proportion looking for a different job has increased from 6.3 per cent in 2008, to 7.6 per cent in 2012. Increases in this proportion occurred for full-time employees, part-time employees and the self-employed. Part-timers were most likely to be looking for a new job. Between 2008 and 2012, this share rose from 7.9 per cent to 10.6 per cent

Table 2. Wants longer hours at current basic rate given the opportunity

	Looking for a different job (%)	More hours (%)	# Extra hours	Actual hours
<i>All</i>				
2008	6.3	7.4	11.6	33.0
2009	4.9	9.1	11.7	32.6
2010	7.1	9.6	11.8	32.6
2011	7.2	9.6	12.0	32.5
2012	7.6	9.9	12.0	32.5
<i>Full-timers</i>				
2008	5.5	4.9	9.4	38.0
2009	4.0	6.2	9.5	37.8
2010	5.7	6.4	9.4	37.9
2011	5.9	6.1	9.5	37.8
2012	6.1	6.3	9.5	37.9
<i>Part-timers</i>				
2008	7.9	15.2	13.3	17.3
2009	6.9	17.6	13.4	17.1
2010	9.6	18.2	13.6	17.2
2011	9.8	19.4	13.8	17.2
2012	10.6	19.7	13.8	17.2
<i>Self-employed</i>				
2008	4.1	7.9	13.0	37.4
2009	3.7	10.4	13.6	36.7
2010	4.8	10.6	13.1	36.5
2011	5.0	10.9	13.2	36.0
2012	5.3	11.3	13.4	35.6

Source: Labour Force Survey micro data (weighted by person weights).

Notes: # extra hours is conditional on the respondent saying they wanted more hours and the number was >0.

of employees. The main reasons given for looking for a different job were little changed between 2011 and 2012. The major reasons given were that pay was unsatisfactory (19.3 per cent); the present job may come to an end (17.9 per cent) along with other aspects of the job (15.8 per cent). Only 8.6 per cent said they wanted longer hours while 2.3 per cent were looking for another job because they wanted shorter hours.

An increasing proportion of the workforce wished to extend their hours. From 2008 to 2012, this share increased from 7.4 per cent to 9.9 per cent. This increase was largely driven by part-timers. In 2012, almost 20 per cent of this group wished to extend their working time. In contrast, only 6.3 per cent of full-timers wanted longer hours. Part-timers also sought the largest average increase in their working time. In 2012, they wished to extend their hours by an average of 13.8 hours, compared with the average of 9.5 hours sought by full-timers. Those that have relatively short working hours are more likely to desire more hours and

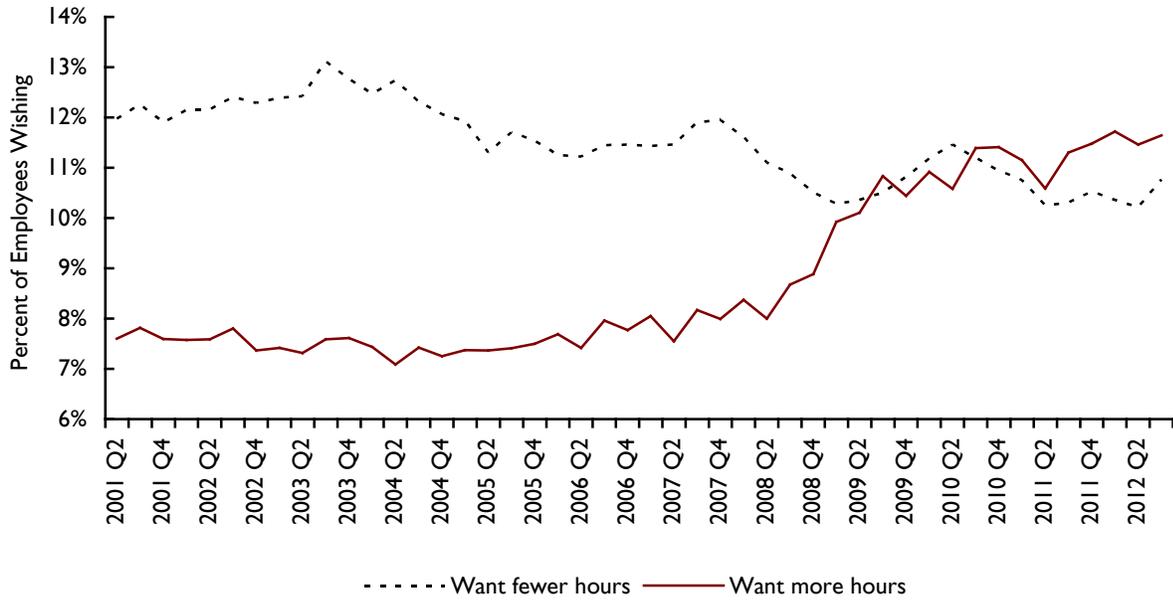
more likely to seek a larger increase in their working hours.

Fewer self-employed workers than part-time employees sought longer hours, but conditional on a desire for longer hours, the self-employed sought an additional 13.4 hours on average. This was almost as many additional hours as was sought by part-time employees. The LFS suggests that the self-employed are more hours constrained than full-time employees. This is surprising given that the self-employed work almost as many hours per week as do full-time employees. The demand for more hours among the self-employed may reflect a desire to self-insure against the effects of fluctuations in product demand, from which they may be less insulated than employees. Nevertheless, it is surprising that the self-employed, who can control their working time to a greater extent than the employed are so severely hours constrained. The likelihood is that there is simply not enough work around, which raises the possibility that some of the self-employed are closer to being self-unemployed.

We now consider some of the trends in underemployment over a longer period. In figure 2 we plot the proportion of workers who would like to work more hours in their existing job without increasing their pay rate. Unlike unemployment, the rise in underemployment has been almost continuous since the start of the recession, other than during a brief period from 2010q2 to 2011q2. By 2012q3, almost 11 per cent of workers were expressing a desire to work longer hours, compared with an average of around 7 per cent in the pre-recession period. The table also shows the proportion of employees responding positively when questioned whether they would be willing to decrease their hours and accept lower pay. We describe this group as the overemployed. And as we shall subsequently discuss, taking account of this group allows us to calibrate whether there is excess supply or excess demand on the intensive margin of the labour market. The share of employees seeking shorter hours has been falling since 2003, though it declined more steeply at the beginning of the recession. It then fell again following a partial recovery during 2009 and early 2010. The net effect is that the numbers of employees wishing to increase their hours have exceeded the numbers wishing to decrease their hours since early 2011. This has not occurred since at least early 2001.

Both those wishing to work more hours and those wishing to work fewer hours are asked how many more or how many fewer hours they would like to work. The average change in desired hours for the two groups is

Figure 2. Proportion of workforce wishing to change working time, 2001–12



Source: Labour Force Survey.

Figure 3. Average change in desired working time, 2001–12

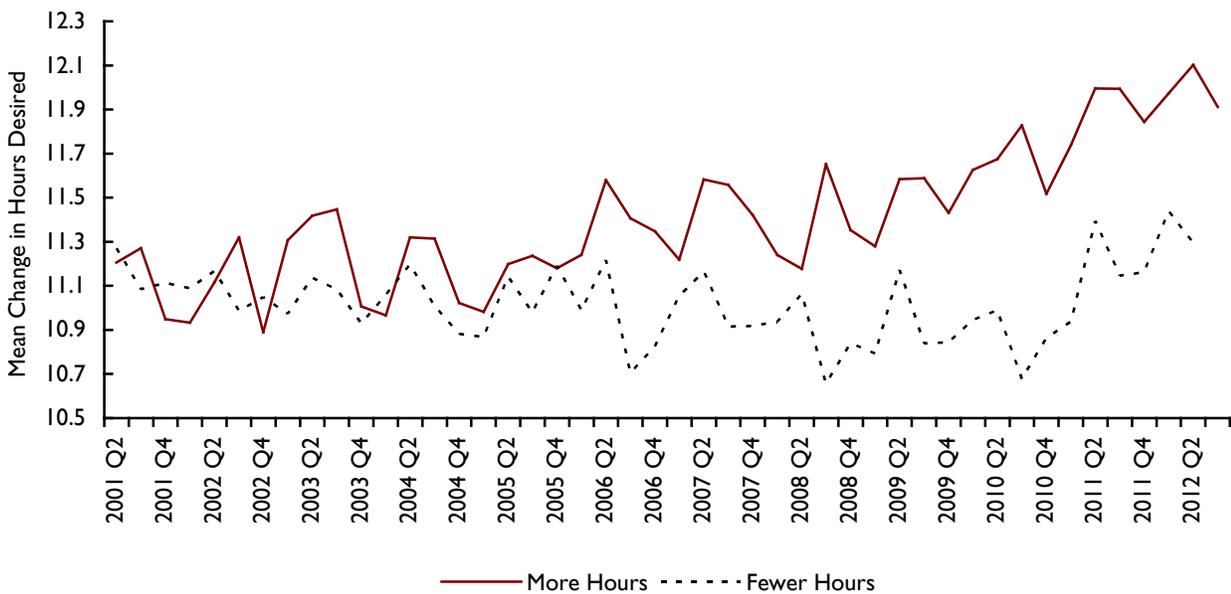
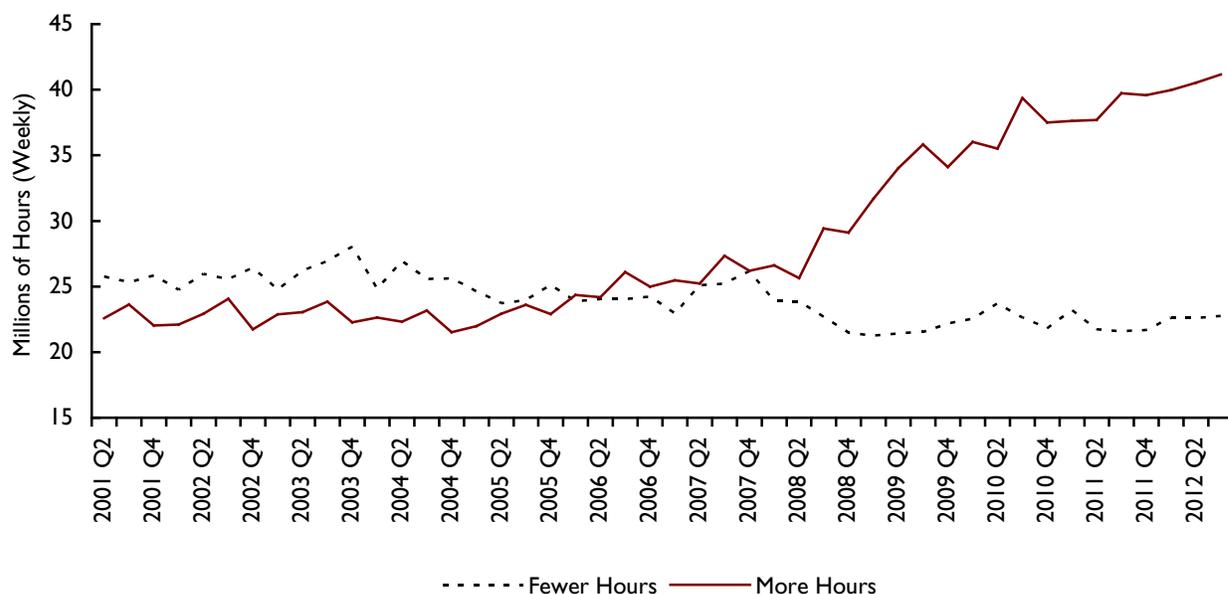


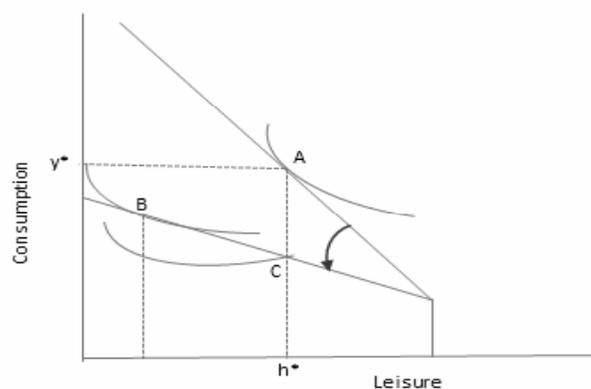
Figure 4. Aggregate change in desired working time, 2001–12



shown in figure 3. Desired increases in hours have grown fairly steadily from 2003, aside from seasonal variation. In contrast, desired reductions in hours were broadly stable until 2010 and have increased modestly since then. Aggregate changes in desired weekly hours are given in figure 4, which shows the sum of the additional weekly hours desired by those who want to work more hours and the equivalent aggregate for those who want to work fewer hours. Until 2007, these aggregates largely balanced out. Desired aggregate increases in hours exceed desired reductions from the beginning of the Great Recession. The gap between these aggregates provides a measure of disequilibrium in the labour market on the intensive margin. This continued to rise through 2012, while unemployment, a measure of disequilibrium on the extensive margin of the labour market, rose at the start of the recession, but stabilised between late 2009 and 2012. Since the start of the recession in 2008 the number of desired hours has risen from a negative balance, where in aggregate workers would like to work less hours, to a situation where they would like to work around 20 million more hours per week. Assuming full-year workers do 2000 hours this is the equivalent of around half a million full-time workers.

One factor influencing excess supply on the internal margin has been the fall in real consumer wages, showing how a fall in real wages in a demand constrained labour

Figure 5. Labour supply and underemployment



market may lead to workers expressing increased demand for hours. Figure 5 illustrates. For a more comprehensive treatment see Naylor (2003). If the substitution effect is dominant and workers are initially at equilibrium at point A, then a reduction in the real wage along with an hours constraint at h^* , leads to workers being constrained at point C. Optimising leads to higher utility at point B. If workers are not prepared or able to move, then they are likely to express a desire to work an additional $hB-h^*$ hours. Such constraints clearly pose difficulties for the estimation of labour supply functions as Ham (1982) notes.

Figure 6. Change in real wages, 2001–12 (AWE)

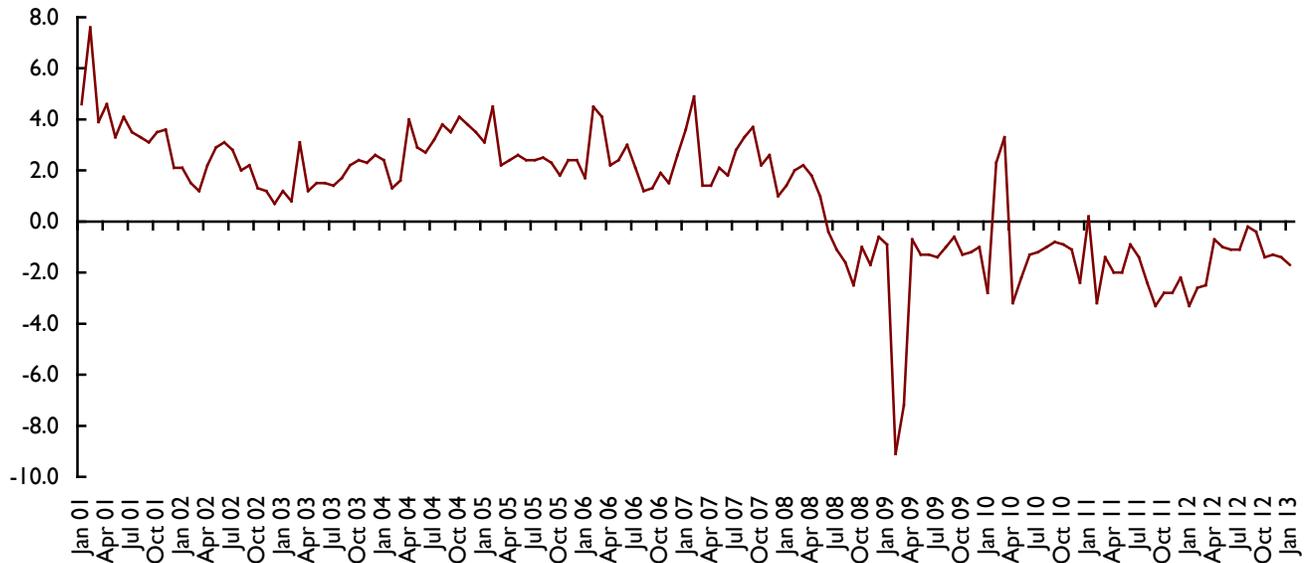


Figure 6 shows there has been a significant decline in UK real wages since the end of 2007. It plots Average Weekly Earnings (AWE), which is the National Statistic on earnings minus the Consumer Price Index (CPI), by month. Since the start of the recession in 2008, the CPI has risen by 17 per cent while average weekly earnings have risen by 7 per cent, suggesting that real earnings have fallen by approximately one tenth during this period. The trend has been almost uniformly negative, except for a brief spike in early 2010 that saw the economy grow by 2.7 per cent in the five quarters from 2009q3 to 2010q3. Since then, as the economy has flat-lined, growing only 0.4 per cent between 2010q4 and 2012q4, real wages have continued to fall. If substitution effects continue to dominate income effects, falling real wages are likely to lead to a greater increase in the numbers wishing to increase their wages and a decline in the number seeking fewer hours, which is clearly consistent with recent trends in over- and underemployment.

In the next section, we use the information on desired hours of work to construct an index of excess capacity in the UK labour market, which incorporates the unemployment rate, but also takes account of the net balance of over and under-employment.

2. The underemployment index

In this section we construct an underemployment index which combines measures of excess capacity on

the intensive (hours) and extensive (jobs) margins of the labour market. Our measure is more general than the unemployment rate because it is affected by the willingness of current workers to supply additional hours – underemployment. It is also different from the underemployment rate calculated by the ONS reported in table 1C because it counts the number of hours workers say they want to work – whether more or less – at going rates of pay. The ONS simply counts up the numbers who say they want more hours. For any given unemployment rate, a higher underemployment index implies that reductions in unemployment will be more difficult to achieve because existing workers are seeking more hours – there is excess capacity on the internal labour market. If the underemployment index is high relative to the unemployment rate and there is an upturn in demand, cost-minimising producers will offer existing workers longer hours, so avoiding recruitment costs and the costs of uncertainty associated with new hires. The unemployment rate will not fall so rapidly when the underemployment index is high.

We define our underemployment index in hours space. Like the unemployment rate, it is expressed as a percentage. It can be thought of as measuring the ratio of net unemployed hours to total available hours assuming that the hours preferences of the employed at current wages are met. It implicitly assumes that the employed who do not express a wish to change their hours are

content with these hours and that the unemployed would wish to work the same number of hours as the employed, on average.³ We begin by transforming the unemployment rate into a measure based on hours. Equation 1 incorporates hours of work into the definition of the unemployment rate. The unemployment rate implicitly allocates equal hours to the employed and the unemployed. We set these hours at \bar{h} , average hours worked by employed workers. The term involving the product of average hours worked and employment is by definition equal to the sum of all hours worked in the economy.

$$u = \frac{U}{U + E} = \frac{U\bar{h}}{U\bar{h} + E\bar{h}} = \frac{U\bar{h}}{U\bar{h} + \sum_i h_i} \quad (1)$$

The next step is to add the intensive margin of the labour market. Preferences over hours are not realised for all workers; some say they want more hours, others would prefer fewer hours. We include these stated preferences in our index, taking them at face value. The sum of preferred additional hours is given by

$$\sum_k \tilde{h}_k^U$$

where the index k is defined over all workers who wish more hours. Similarly, aggregate preferred reduction in hours is given by

$$\sum_j \tilde{h}_j^O$$

where the index j is defined over all workers who wish fewer hours. We assume that transactions costs prevent exchange of working time between these groups. Further, it is unlikely that desired changes in hours will be randomly distributed within firms. Those firms experiencing weak demand are likely to have more workers wishing longer hours, reducing the probability of within-firm re-contracting towards a preferred distribution of hours among workers. To construct our index, the net effect of the desired changes in hours is added to the numerator of Equation 1 to complete the underemployment index, u^* , which is given in Equation 2.

$$u^* = \frac{U\bar{h} + \sum_k \tilde{h}_k^U - \sum_j \tilde{h}_j^O}{U\bar{h} + \sum_i h_i} \quad (2)$$

If, in aggregate, the desired increase in hours equals the desired reduction in hours, then u^* simply reproduces

the unemployment rate; excess capacity in the labour market is only influenced by the extensive margin. But u^* will differ from the unemployment rate if there is excess supply (or excess demand) on the internal labour market. The underemployment index could therefore be greater than, or less than, the unemployment rate. It would be lower than the unemployment rate when aggregate desired hours reductions exceed aggregate desired hours increases. This measure presents a more complete picture of excess demand or excess supply in the labour market as a whole than does the unemployment rate because it incorporates disequilibrium on the extensive margin. This suggests that it may also offer advantages over the unemployment rate as a means of calibrating the level of excess capacity in the economy – the so-called *output gap*.

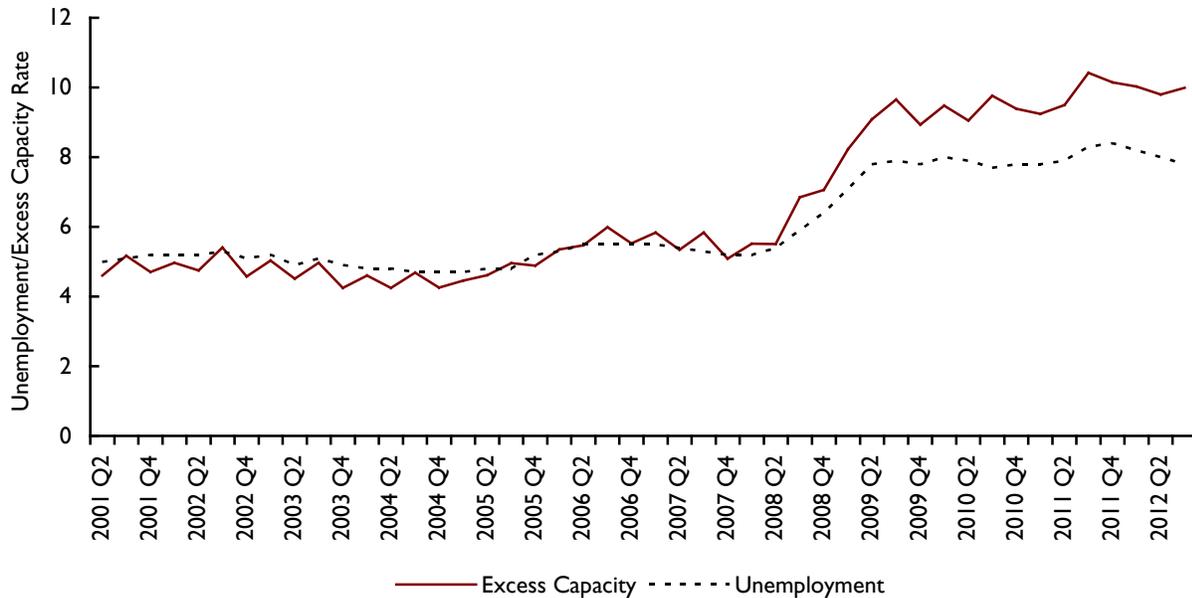
Suppose the desired aggregate increases and reductions in hours were equal in size. Our index is not affected by the *absolute value* of these desired increases and reductions. It does not capture the extent of *mismatch* in the internal labour market. Mismatch would be high when large numbers of workers wishing to increase their hours co-exist in the labour market with large numbers wishing to reduce their hours. The sum of desired hours increases and reductions, which is given by

$$\sum_k \tilde{h}_k^U + \sum_j \tilde{h}_j^O$$

is a possible indicator of such mismatch. One might expect mismatch to be high when there are large variations in product demand among firms. In those firms where the product market is strong, workers may wish to reduce hours. Similarly, workers in firms where product demand is weak may jointly wish to increase their working time.

Our underemployment index is relatively easy to calculate from successive waves of the LFS micro-data. We add together the desired additional hours of those who say they want to work more hours. Similarly, we sum the desired reductions in hours for those who claim they would like to work fewer hours. We also use the LFS to estimate employment, unemployment and average hours of work. All of these statistics are converted to national estimates using weights supplied with the LFS. We include the employed, self-employed, family workers and those on government schemes when calculating total employment and average working hours. Together these calculations provide all five of the components necessary to calculate our underemployment index which is u^* in Equation 2.

Figure 7. UK unemployment and underemployment index, 2001–12 (per cent)



Following the practice of the ONS, claims of underemployment among those aged between 16 and 18 and working 40 or more hours and those aged over 18 and working 48 hours or more are disregarded.⁴ Similarly, those aged between 16 and 18 and working 15 or fewer hours and those aged over 18 and working 20 hours or less were disregarded.

The evolution of the index between 2001 and 2012 is shown in figure 7 alongside the published unemployment rate. It is clear that from 2001 until 2008 the two measures were closely matched. Though there were more workers wishing to reduce their hours than increase them over this period, those wishing to increase their hours wanted, on average, to add more hours to their workweek than those who wanted fewer hours wished to give up. Net underemployment was therefore close to zero and the underemployment index therefore closely followed the unemployment rate.

Since 2008 there has been a divergence between the unemployment rate and our index (see figure 7). This is caused by increasing numbers of workers wishing to extend their hours and a fall in the number wanting fewer hours. Interestingly, though the unemployment rate stabilised after 2010, the value of u^* has continued to increase. This must have been a consequence of increased net underemployment. We would argue that the stabilisation of the unemployment rate since 2010 is

not sufficient evidence to conclude that the overall health of the UK labour market is improving. The increase in our index since 2010 is indicative of growing excess capacity in the UK labour market.

Does the unemployment rate and our index vary across labour market categories? We confirm that this is the case in table 3, which shows our index and published unemployment rates for 2008, 2010 and 2012 calculated separately for a number of labour market categories. To clarify how the underemployment index is calculated, the 9.9 per cent for 2012 in the top row of table 3 is worked out as follows: we assume that the unemployed work the same average hours as the currently employed, which does not seem unreasonable given their characteristics.⁵ The denominator takes total number of hours worked (918.4 million per week) which is made up of 28.97 million workers who work an average of 31.7 hours per week. Added to that is number of unemployed (2.574 million) multiplied by average hours of 31.7 (81.5 million) = 999.9 million hours. The numerator is the number of unemployed hours (81.5 million) plus the total extra hours the employed would like to work = 40.6 million minus the number of hours of the people who say they want to work fewer hours (22.8 million). So we get $(81.5 + 40.6 - 22.8) / 999.9 = 99.4 / 999.9 = 9.9$ per cent.⁶

The first row of the table confirms the finding of figure 7 that our index has risen by more than the published

Table 3. Unemployment rate and underemployment index, 2008–12

	Underemployment index			Unemployment rate		
	2008	2010	2012	2008	2010	2012
All	6.2	9.4	9.9	5.8	7.8	8.0
Youth (age 16–24)	20.4	27.3	30.0	13.2	17.6	19.5
Prime age (age 25–49)	4.8	7.8	8.1	4.2	6.3	6.2
Older (age 50+)	1.0	3.2	3.5	3.2	4.6	4.6
Male	6.4	9.9	10.0	5.9	8.9	8.8
Female	6.3	9.1	10.2	5.0	6.9	7.7
White	5.4	8.5	8.9	5.7	7.9	7.5
Mixed	16.3	17.9	19.2	13.2	14.0	15.4
Asian or Asian British	13.2	16.5	17.7	9.9	11.6	12.5
Black or Black British	17.0	22.6	23.1	13.3	16.4	17.1
Chinese	9.7	8.8	16.7	7.4	8.2	10.7
Other ethnic group	13.9	18.5	18.9	10.5	13.4	13.2
Northern Yorks and Humber	7.5	10.3	12.5	7.8	9.5	10.3
East Midlands	6.6	11.1	11.0	6.4	9.3	9.3
East	6.6	9.4	9.9	5.9	7.7	8.0
South East	5.3	8.2	8.3	5.0	6.6	6.7
South West	6.1	9.0	9.4	4.4	6.2	6.4
West Midlands	4.7	7.7	7.6	4.3	4.3	6.0
North West	7.2	10.4	10.6	6.9	8.9	8.7
Wales	7.7	9.7	11.3	6.9	8.2	9.0
Scotland	6.8	10.2	11.3	6.3	8.7	8.6
Northern Ireland	4.9	9.9	10.2	4.8	8.3	8.0
	4.2	8.5	8.6	4.4	6.9	7.4

Notes: No published unemployment rates for 2012 were available for ethnic group. Our own estimates from the Labour Force Survey have been substituted.

unemployment rate, particularly since 2010. Between 2010 and 2012, the underemployment index rose from 9.4 to 9.9 per cent, while the unemployment rate hardly changed. The unemployment rate was 8.0 per cent in 2012, suggesting that excess hours capacity within firms contributed a further 1.9 per cent to the overall underutilisation of labour that year.

Table 3 has a number of other striking features. First, not only do young people aged 16–24 have the highest unemployment rates of any age group, they also have the greatest gap between their unemployment rate and their underemployment index. In 2012, the supply of youth labour exceeded its equilibrium level by 30 per cent. Not only was the unemployment rate 21.6 per cent, but the shortfall in hours actually worked over desired hours increased the underemployment index by

a further 8.4 per cent. In contrast, among older workers, the underemployment index is consistently lower than the unemployment rate. This is because older workers typically wish to reduce, rather than increase, their hours, implying that actual hours exceed desired hours for this group and so the underemployment index is lower than the unemployment rate. Given that we are including everyone sixteen and over in this analysis, and given that older workers are more likely to want fewer hours, in all likelihood the gap between the underemployment rate and the unemployment rate would be larger if the sample was restricted to those of working age (16–64).

Although the unemployment rate for men typically exceeds that for women, the excess capacity indices for both sexes are almost identical. This implies that women are more likely than men to want to work longer hours. This is consistent with the evidence from table 2 that part-timers express relatively high levels of demand for extra hours and that women are more likely than men to work part-time.

Looking at excess capacity and unemployment rates by ethnic groups, it seems that those with higher unemployment rates also experience higher rates of excess labour capacity. This is particularly true in the ‘Black or Black British’ category, where the unemployment rate in 2012 was 17.1 per cent and the excess capacity rate was 23.1 per cent. Interestingly, though the unemployment rate among the Chinese was somewhat higher than that among whites, the underemployment index for this group was substantially higher, at 16.7 per cent, in 2012 compared with a rate of 8.9 per cent among whites. Chinese employees are substantially more likely to express a desire to work longer hours than their white counterparts.

Regional estimates of unemployment and excess capacity indices in table 3 indicate that the Northern region has the highest scores on both measures. The largest gap between the rates occurs in Wales (2.4 per cent), indicating that it is the region with the largest net balance of desired longer hours.

Overall, 19.8 per cent of part-timers and 6.3 per cent of full-timers reported they wanted more hours. The proportions have been rising over time as can be seen in table 4, driven primarily by the steady rise among part-timers, in both the public and private sectors.⁷ The jump in the proportion of full-timers occurred principally between 2008 and 2009.

We should note, of course, that this rise in underemployment has not been because of a decline in average

Figure 8. Average hours, 2008–12

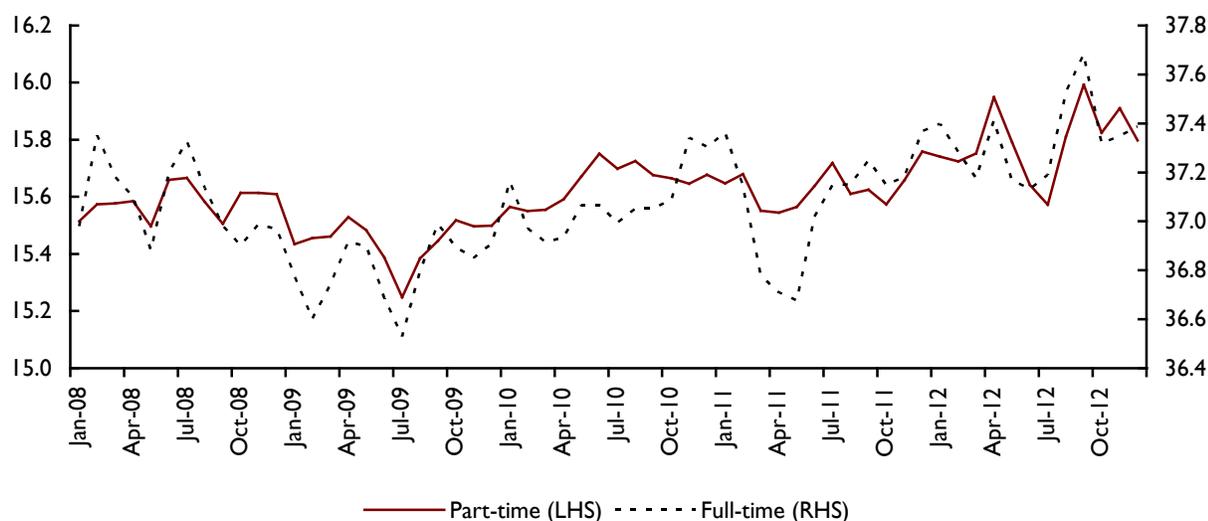


Table 4. Proportion of workers wanting extra hours

	Full-timers	Part-timers	All
<i>Total economy</i>			
2008	5.1	16.5	7.9
2009	6.4	18.9	9.6
2010	6.8	20.1	10.3
2011	6.5	21.5	10.4
2012	6.7	22.1	10.7
<i>Private sector</i>			
2008	5.3	16.6	7.9
2009	6.9	19.6	9.9
2010	7.0	20.2	10.3
2011	6.7	22.3	10.6
2012	6.8	22.1	10.8
<i>Public sector</i>			
2008	4.5	15.9	7.8
2009	5.0	17.1	8.4
2010	5.8	18.1	9.4
2011	5.6	19.1	9.5
2012	5.8	19.1	9.7

Source: Labour Force Surveys.

hours which haven't actually fallen since 2008 (Plunkett, 2013).⁸ Figure 8 illustrates plus ONS data which shows that, if anything, there has been an increase in average hours. According to the ONS average hours for full-time workers in January 2008 was 37.0 compared with 37.4 in December 2012; in the case of part-timers hours worked also increased, going from 15.5 and 15.8

respectively. This suggests that the driving force more likely is the fall in real wages identified above, rather than a drop in hours. Workers need to work more hours to pay their bills, which suggests the economy is not supply (of hours) constrained.

3. Determinants of underemployment

We finally look more closely into the factors explaining underemployment by examining its determinants at the individual level using data on approximately three quarters of a million individuals from the Labour Force Survey from 2008–12. Table 5 estimates underemployment equations over preferences between part-time and full-time employment and over the number of hours that a worker wishes to work. It is not restricted to employees only but includes the self-employed, family workers and those on government training schemes. These groups are also asked whether they wish to work more hours. Thus columns 1 and 2 model the probability of a part-timer reporting they would prefer to have a full-time job using a dprobit estimator where the coefficients can be interpreted as marginal effects. Column 1 covers all workers while column 2 is restricted to part-timers only. Columns 3–5 use Ordinary Least Squares to model the number of hours an individual would like to work, where the dependent variable is set to zero if the respondent is content with their working hours. Column 3 is for all workers while column 4 is for full-timers only and column 5 for part-timers. We exclude 4025 cases from all four equations, where workers say they would like

Table 5. Preferences over hours

	Part-time prefer full-time		Number extra hours preferred			
	All workers	Part-timers	All workers	Full-timers	Part-timers	
Full-timers	n/a	n/a	-2.8639 (230.31)	n/a	n/a	
Self-employed	0.0528 (33.40)	0.0013 (0.63)	0.4061 (25.89)	0.3125 (25.58)	0.5119 (10.94)	
Govt. training scheme	0.0673 (1.53)	0.0402 (1.27)	1.4077 (3.03)	-0.5121 (1.09)	1.0412 (1.08)	
Male	-0.2848 (261.23)	-0.1504 (75.60)	0.8255 (70.95)	0.2502 (28.14)	2.7083 (71.68)	
2009	-0.0039 (2.69)	-0.0301 (12.58)	0.2199 (13.82)	0.1295 (10.42)	0.4129 (8.95)	
2010	-0.0016 (1.18)	-0.0489 (21.12)	0.3124 (20.49)	0.1574 (13.21)	0.6502 (14.72)	
2011	-0.0076 (5.42)	-0.0659 (27.83)	0.3746 (24.41)	0.1610 (13.42)	0.8665 (19.46)	
2012	-0.0093 (5.27)	-0.0914 (29.41)	0.4540 (23.50)	0.1767 (11.67)	1.0748 (19.35)	
16-17	0.5345 (94.96)	0.0817 (25.70)	-0.0432 (0.95)	0.1849 (2.80)	-0.5805 (6.64)	
18-24	0.0193 (9.61)	-0.0863 (26.81)	1.3702 (63.04)	0.4539 (26.32)	2.5711 (40.52)	
25-29	-0.0757 (41.20)	-0.0544 (15.66)	0.4789 (22.55)	0.2359 (14.85)	10.1230 (15.59)	
30-34	-0.0247 (13.10)	0.0029 (0.99)	0.1079 (5.26)	0.1125 (7.23)	-0.0061 (0.09)	
35-39	0.0120 (6.46)	0.0138 (5.15)	-0.0127 (0.65)	0.0576 (3.83)	-0.2077 (3.49)	
45-49	-0.0257 (14.85)	-0.0209 (7.49)	-0.0223 (1.18)	-0.0383 (2.65)	-0.0446 (0.76)	
50-54	-0.0247 (13.82)	-0.0184 (6.48)	-0.1948 (9.93)	-0.1358 (9.06)	-0.5574 (9.20)	
55-59	0.0233 (11.75)	0.0129 (4.74)	-0.5266 (25.23)	-0.2154 (13.31)	-1.6299 (26.32)	
60-64	0.2079 (80.61)	0.0722 (29.85)	-1.2350 (52.03)	-0.3984 (20.40)	-2.9799 (47.03)	
65-69	0.4885 (117.34)	0.1002 (39.18)	-2.1545 (59.66)	-0.5331 (14.02)	-3.9311 (50.96)	
70+	0.6349 (103.62)	0.1022 (33.22)	-2.6909 (51.36)	-0.6391 (9.08)	-4.4403 (44.95)	
Mixed	-0.0123 (2.23)	-0.0304 (3.85)	0.4968 (8.00)	0.1756 (3.59)	0.8638 (4.89)	
Asian	0.0339 (13.70)	-0.0326 (9.94)	0.7643 (30.15)	0.4674 (23.71)	0.9210 (12.27)	
Black	-0.0108 (3.18)	-0.0658 (12.73)	1.4139 (37.81)	0.8540 (29.51)	2.3009 (20.57)	
Chinese	-0.0190 (2.69)	-0.0580 (5.38)	0.5097 (6.54)	0.1496 (2.49)	1.2459 (5.34)	
Other race	0.0067 (1.51)	-0.0808 (12.63)	0.7993 (17.21)	0.4295 (11.91)	1.2364 (9.02)	
No race	-0.0405 (1.91)	-0.0607 (1.68)	1.6456 (6.92)	0.8212 (4.48)	4.0378 (5.64)	
DDA disabled	0.0945 (46.22)	0.0161 (7.05)	0.2703 (12.59)	0.1814 (9.88)	0.2119 (4.06)	
Work limiting disabled	-0.0096 (5.22)	-0.0062 (2.22)	0.1426 (6.92)	0.0832 (5.10)	0.1492 (2.57)	
Not disabled	0.0433 (15.47)	-0.0245 (6.88)	0.3555 (12.02)	0.1282 (5.28)	0.6932 (9.01)	
No qualifications	0.0957 (5.61)	-0.0331 (1.54)	0.6918 (4.53)	0.3802 (3.31)	1.9410 (3.88)	
Agriculture	0.0026 (0.52)	0.0262 (3.00)	-0.2584 (5.41)	-0.3125 (8.92)	-0.6202 (3.46)	
Energy & water	0.0207 (3.90)	0.0333 (3.51)	-0.1859 (4.56)	-0.1218 (4.29)	-0.5510 (2.60)	
Construction	0.0268 (8.65)	-0.0432 (7.25)	-0.0147 (0.61)	0.0535 (3.14)	0.2790 (2.42)	
Distribution & hotels	0.2443 (93.37)	-0.0227 (5.61)	0.4081 (20.40)	0.1221 (8.15)	0.4968 (6.06)	
Transport & communication	0.0887 (29.62)	-0.0192 (3.83)	0.1007 (4.31)	0.0116 (0.70)	0.3693 (3.61)	
Banking & finance	0.1324 (50.87)	-0.0162 (3.77)	0.0855 (4.13)	0.0144 (0.95)	0.1852 (2.15)	
Public admin, educ & health	0.1703 (65.19)	-0.0100 (2.39)	0.2058 (8.88)	0.1807 (0.12)	0.1466 (1.69)	
Other services	0.2235 (66.22)	-0.0194 (4.15)	0.3363 (12.25)	0.1464 (6.68)	0.4591 (4.91)	
Rest Northern region	0.0163 (3.83)	-0.0058 (1.03)	0.0478 (1.08)	0.0305 (0.88)	0.1881 (1.46)	
South Yorkshire	0.0317 (6.74)	0.0183 (3.19)	0.0492 (1.01)	0.1305 (3.42)	-0.0274 (0.20)	
West Yorkshire	0.0154 (3.78)	0.0270 (5.35)	-0.0133 (0.31)	0.0542 (1.63)	-0.1590 (1.26)	
Rest of Yorks & Humberside	0.0438 (9.81)	0.0194 (3.62)	-0.0498 (1.10)	0.0732 (2.06)	-0.1438 (1.12)	
East Midlands	0.0233 (6.15)	0.0138 (2.88)	0.0860 (2.19)	0.0814 (2.65)	0.2262 (1.98)	
East Anglia	0.0351 (8.50)	0.0206 (4.09)	0.0591 (1.40)	0.0643 (1.94)	0.2165 (1.78)	
Central London	-0.0699 (18.56)	0.0236 (3.97)	-0.2149 (4.96)	-0.1005 (3.07)	-0.5505 (3.68)	
Inner London (not central)	-0.0230 (5.57)	0.0081 (1.41)	0.0510 (1.12)	0.0422 (1.21)	0.1096 (0.79)	
Outer London	0.0105 (2.65)	0.0109 (2.14)	0.1316 (3.15)	0.0903 (2.77)	0.3635 (2.98)	
Rest of South East	0.0378 (10.61)	0.0344 (7.93)	-0.0367 (1.00)	0.0625 (2.18)	-0.0808 (0.75)	
South West	0.0452 (11.87)	0.0258 (5.68)	0.0023 (0.06)	0.1180 (3.90)	-0.0749 (0.67)	
West Midlands						
Metrop	0.0000 (0.01)	0.0073 (1.38)	-0.0619 (1.45)	-0.0203 (0.61)	-0.0736 (0.58)	

Table 5. (continued)

Rest of West										
Midlands	0.0293	(7.21)	0.0130	(2.56)	-0.0397	(0.95)	-0.0066	(0.20)	0.0319	(0.26)
Greater Manchester	0.0026	(0.65)	0.0136	(2.62)	0.0139	(0.33)	0.0456	(1.39)	-0.0418	(0.33)
Merseyside	0.0165	(3.49)	0.0139	(2.29)	-0.0539	(1.08)	-0.0187	(0.48)	-0.1232	(0.85)
Rest of North West	0.0164	(4.06)	0.0124	(2.40)	0.0022	(0.05)	0.0364	(1.10)	0.0260	(0.21)
Wales	0.0119	(3.01)	-0.0069	(1.29)	0.0526	(1.26)	0.0732	(2.24)	0.0596	(0.49)
Strathclyde	-0.0083	(2.03)	-0.0139	(2.36)	0.1660	(3.76)	0.0662	(1.93)	0.4471	(3.42)
Rest of Scotland	0.0202	(5.10)	0.0051	(0.98)	0.0076	(0.18)	0.0107	(0.33)	0.0933	(0.78)
Northern Ireland	-0.0167	(4.21)	-0.0180	(3.06)	-0.3256	(7.55)	-0.2027	(6.08)	-0.6048	(4.70)
Outside UK	-0.0910	(7.24)	0.0043	(0.17)	-0.4667	(4.36)	-0.2893	(3.89)	-1.4671	(2.20)
Public company, plc	-0.0071	(2.14)	0.0154	(3.28)	-0.1006	(2.95)	-0.0418	(1.62)	-0.3884	(3.58)
Nationalised										
industry etc	-0.0272	(4.07)	-0.0895	(7.43)	0.1501	(2.38)	0.0584	(1.28)	0.6240	(2.56)
Central govt.,										
civil service	-0.0566	(21.04)	0.0552	(11.57)	-0.3025	(9.57)	-0.2181	(9.16)	-1.0172	(9.50)
Local govt. or council	0.0117	(6.72)	-0.0148	(6.09)	0.0905	(4.53)	-0.0295	(1.79)	0.2989	(5.80)
University, etc	0.0155	(4.41)	-0.0083	(1.61)	0.0149	(0.38)	-0.1068	(3.38)	0.0385	(0.35)
Health authority or										
NHS trust	-0.0024	(1.15)	0.0297	(9.96)	-0.3961	(15.72)	-0.1854	(8.91)	-0.7800	(12.02)
Charity, voluntary										
org, etc	0.0328	(11.62)	-0.0093	(2.44)	0.0881	(2.73)	-0.0103	(0.37)	0.2560	(3.23)
Armed forces	-0.1399	(19.89)	0.0271	(1.26)	-0.7449	(10.93)	-0.6348	(3.54)	0.7162	(1.42)
Other kind of										
organisation	-0.0048	(0.96)	-0.0259	(3.48)	0.0739	(1.33)	-0.1142	(2.56)	0.4763	(3.11)
Constant					1.8970		-0.1603		0.4207	
Pseudo/Adjusted R ²	0.2257		0.1283		0.1018		0.0171		0.1016	
N	797,047		220,110		766,174		551,515		214,659	

Source: Labour Force Surveys, 2008–12.

Notes: Excludes 4025 cases that said they would prefer less hours (lespay). Equations include 66 highest qualification dummies and 11 month dummies – results not reported. Region is defined as region where the individual works. Sample is of workers only. Column 1=dprobit, column 2=OLS. Additional excluded categories, private sector, manufacturing and higher education. T-statistics in parentheses.

fewer hours but they aren't asked how many less. The increase in the time coefficients in all four columns is clear – underemployment is rising over time. We examine the two sets of results in turn.

In column 1 it is apparent that the self-employed, women, the young, Asians, the disabled, in universities, local government and charities and among those without qualifications are especially likely to be in part-time jobs that they would prefer to be full-time. Workers are especially likely to report they are in part-time jobs, that they would prefer were full-time, in distribution and hotels, and in Yorkshire and the South West. In column 2 the sample is restricted to part-timers only and the results are rather different, although there is still evidence of underemployment among women, the young and the least educated. Conditional on being in a part-time jobs, whites are more likely to say they would like to be full-time than minorities and there are strong regional and industry effects. It is apparent that part-time civil servants, who have likely been impacted

by public sector spending cuts, would prefer to be full-time.

Columns 4–7 report estimates of the number of extra hours workers would like to work, at current pay rates for all workers and separately for full-timers and part-timers.⁹ We find evidence that full-timers are looking for less hours than the part-timers (column 3), and men are looking for more hours, especially if they are part-time. The self-employed who are part-time are notable in wanting more hours and these do look like the self-unemployed. Minorities, especially blacks and the disabled want more hours as do the young. There are big industry and region of work effects among full-timers but less so among part-timers.

4. Conclusions

This paper has updated some of the statistics that we previously presented on underemployment in the UK labour market. It shows that the magnitude of this phenomenon has continued to grow as the recession has

lengthened in the sense that an increasing proportion of the workforce wish to extend their hours. There has been a particularly steep, and perhaps surprising, increase in the numbers of self-employed workers who would like to work more hours. The increasing numbers of self-employed in the labour market has been an important feature of the current recession. Given that a large proportion of this group are seeking additional working time, a share of the transitions into self-employment may also reflect lack of opportunities in the rest of the labour market.

Second, we have presented a new *underemployment index* – a measure of excess capacity in the labour market that combines information on unemployment and underemployment. If the internal labour market is in equilibrium in the sense that the demands for increased hours are exactly offset by demands for reduced hours, then the underemployment index reproduces the unemployment rate. Our estimates show an increasing divergence between the unemployment rate and the underemployment index since the start of the recession, reflecting the increasing demands among the workforce to increase working time and reductions in demands to reduce hours. Because it reflects both the internal and external labour markets, this index gives perhaps a broader estimate of the extent of underused capacity in the economy – the output gap – than a simple measure based on the unemployment rate.

We have also looked at some of the microeconomic determinants of underemployment. As with unemployment, it is the young and unqualified that are particularly prone to underemployment. This positive correlation is particularly unfortunate, since it suggests that the young unqualified unemployed have a particularly difficult route into employment since employers may choose to

give their peers more hours before making new hires. This will extend the unemployment durations of the young, and thus increase the probability that they will experience long-term scarring effects of unemployment while young, such as future unemployment spells and reduced wages.

It is our view that this underemployment index should be published monthly by the ONS by rolling quarter alongside the unemployment rate; it is not a substitute but a useful complement. The United States already publishes five series on the extent to which labour market resources are underutilised, so there is precedent.¹⁰ The benefit of our underemployment index is that it gives a somewhat different, and potentially more accurate picture of labour market slack than the unemployment rate does, particularly in a recession. The data required to calculate it are already available in the monthly Labour Force Survey so producing it would be virtually costless.

Perhaps the most important finding we have is that there appears to be significant slack in the economy. The primary argument made by the supporters of the government's current macroeconomic stance is that what's going in the labour market shows that the UK economy is primarily supply not demand constrained, that the output gap is small, and crucially that the labour market statistics show that we are now quite close to full employment or the NAIRU. The paper potentially deals quite a big blow to that view by showing that there is very substantial spare capacity in the labour market; the implication being that if demand were higher, output could easily be higher, and it could be higher without exerting any significant upward pressure on real wages. So any further stimulus, whether fiscal or monetary, would not be inflationary. People want to work.

NOTES

- 1 The latest labour market data at the time of writing published by the ONS showed that average weekly earnings in January 2013 rose by 1.2 per cent whereas the CPI was 2.8 per cent.
- 2 <http://www.ons.gov.uk/ons/rel/lmac/underemployed-workers-in-the-uk/2012/sty-underemployed-workers-in-the-uk.html>.
- 3 We also estimated weekly hours regressions among the employed using the LFS. We used these estimates to predict hours for the unemployed. The predicted hours were not significantly different from mean hours among the employed. Hence we opted for the simpler formulation using mean hours among the employed.
- 4 ONS (2012) http://www.ons.gov.uk/ons/dcp171776_289024.pdf.
- 5 To check this we estimated a series of hours regressions with personal controls including gender, age, race, qualifications and region for each of the 47 waves of the LFS. We used each of these equations to predict the hours of the unemployed which were very close to the average hours worked at each time point so for simplicity we opted to use average hours of the employed. The underemployment index is little changed therefore using either method.
- 6 The appendix reports the data used to construct the underemployment index.
- 7 The public sector variable in the LFS does suffer from quite significant mis-measurement – the classic example is the person working in a public sector workplace but for a private sector subcontractor who classifies himself as a public sector employee.

In this case the results are broadly similar across public and private sectors so such concerns are not an issue here.

- 8 http://www.resolutionfoundation.org/media/media/downloads/The_UK_jobs_gap_2.pdf.
- 9 This variable has a mean of 1.32 and a standard deviation of 4.5 with 5 per cent of the distribution reporting 10 hours or more and 1 per cent report they want 21 extra hours and more.
- 10 The BLS publishes five measures of underutilisation each month in Table A-15 in The Employment Situation <http://www.bls.gov/news.release/empsit.nr0.htm>.

REFERENCES

- Bell, D.N.F and Blanchflower D.G. (2010), 'UK unemployment in the Great Recession', *National Institute Economic Review*, October, 214, R3–R25.
- (2011), 'UK underemployment in the Great Recession', *National Institute Economic Review*, January, 215, R23–33.
- Ham, J.C. (1982), 'Estimation of a labour supply model with censoring due to unemployment and underemployment', *The Review of Economic Studies*, 49(3), pp. 335–54.
- Naylor, R.A. (2003), 'Labour supply, efficient bargains and countervailing power', in Waterson, M. (Ed.), *Competition, Monopoly and Corporate Governance: Essays in honour of Keith Cowling*, Edward Elgar, pp. 101–16.
- Plunkett, J. (2013), 'Sizing the jobs gap,' The Resolution Foundation.

Appendix: Data used to construct the underemployment index

	Millions of weekly hours				Underemployment index	Published unemployment rate
	Desired		'Unemployed'	Total		
	Reductions	Increases				
2001	25.6	22.8	48.6	899.4	4.8%	5.1%
2002	25.7	22.7	49.0	887.7	4.9%	5.2%
2003	26.5	23.0	47.3	889.6	4.7%	5.1%
2004	25.7	22.4	44.9	890.2	4.4%	4.9%
2005	24.4	22.9	46.7	908.6	4.7%	4.9%
2006	24.0	24.9	53.1	912.7	5.6%	5.5%
2007	24.9	26.1	52.4	919.5	5.5%	5.4%
2008	23.0	27.7	55.9	915.8	6.2%	5.8%
2009	21.6	33.9	74.9	897.1	9.0%	7.8%
2010	22.7	37.1	76.9	892.9	9.4%	8.0%
2011	22.1	38.7	80.2	905.9	9.8%	8.2%
2012	22.7	40.6	81.5	918.4	9.9%	8.1%